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Some Aspects of the Milk Supply.*

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While the development of our knowledge with regard to the relation of bacteria to the wholesomeness of foods has led to the study of the bacterial content of milk as a means of determining its purity, it is to be noted that attempts at regulating public milk supplies were made long before the subjects of bacteriology and sanitary science had been established. Thus we find that in 1599 the Senate of Vienna forbade the sale of milk, butter and cheese for some time on account of an epidemic which they believed to have originated from the dairy products. Again, an extract from an encyclopædia published in 1739 is as follows: "Milk from old cows or cows raised for beef is not good; good milk is either white or yellow, not green or blue; cows must be properly fed and the straw must be clean; milkmaids must keep themselves clean; utensils must be clean, and, after milking, the milk should be filtered through a cloth; uncleanly milk turns sour." Towards the end of the 18th century a Frenchman quoted a case where a cow was bitten by a mad dog, as a result of which the milk given by the cow and consumed by the owner and his son produced rabies in these human subjects! In 1842 Hartley, an American, who lost a child and ascribed its death to impure milk, published a book in New York entitled "An Historical, Scientific and Practical Essay on Milk as an Article of Human Sustenance; with consideration of the effects consequent upon the present unnatural methods of producing it for the supplies of large cities."

In this country the first legal steps which were taken to control the supply of milk came with the passing of certain Public Health Acts (including the "Dairies, Cow Sheds and Milk Shops Order" (1885) and the Public Health (Scotland) Act (1897)), at the end of the nineteenth and beginning of the twentieth centuries. These acts necessitated "dairymen, cowkeepers and other" to register as milk producers and have their premises approved by the Sanitary Authorities, and Local Authorities were given certain powers which enabled them to help in the general prevention and mitigation of disease. However, with the knowledge then at their disposal with regard to the hygienic aspect of milk production, it is obvious that the powers granted to Local Authorities were of little use as far as the prevention of disease was concerned. Since that time, however, a considerable amount of information has been collected and while, because of the variety of intricate questions which the study opens up, it is impossible for the scientific worker to obtain a clear view of the position as it now stands without great expenditure of both time and labour, I shall endeavour to trace, very briefly, the development of our knowledge with regard to the hygienic aspect of milk production.

Following closely upon the development of the subject of medical and veterinary bacteriology, we find that a considerable amount of attention was given to the types of micro-organisms occurring in milk which might be capable of setting up disease in the human subject. The Royal Commission on Tuberculosis were investigating, among other things, the possibility of the bovine strain of the tubercle bacillus setting up tuberculosis in the human subject; workers in other parts of the globe were concentrating their attention on the rôle of streptococci and other organisms in milk, and in this country and America a considerable amount of useful work was being done on milk-borne epidemics. It is interesting to note that it was not until the years just prior to the commencement of the Great War that the results of all this work began to make themselves evident. By that time the Final Report of the Royal Commission on Tuberculosis (1) had shown beyond all doubt that the bovine tubercle bacillus was capable of setting up tuberculosis in the human subject. It stated: "Of young children dying from primary abdominal tuberculosis the fatal lesions could in nearly one half of the cases be referred to the bovine bacillus and to that type only. In children, too, and often also in adolescents, suffering from cervical gland tuberculosis a large proportion of the cases examined by us could be referred to the bovine tubercle bacillus . . . . . the evidence we have accumulated goes to demonstrate that a considerable amount of the tuberculosis of childhood is to be ascribed to infection with bacilli of the bovine type transmitted to children in meals, consisting largely of the milk of the cow. . . . . We are convinced that measures for securing the prevention of ingestion of living bovine tubercle bacilli with milk would greatly reduce the number of cases of abdominal and cervical gland tuberculosis in children, and that such measures should include the exclusion from the food supply of the milk of the recognisably tuberculous cow, irrespective of the site of the disease, whether in the udder or in the internal organs." With regard to the prevalence of tubercle bacilli in ordinary market milk supplies, the literature which had accumulated can only be described as voluminous. The Royal Commission reported that "Bovine tubercle bacilli are apt to be abundantly present in milk as sold to the public when there is tuberculous disease of the udder of the cow from which it was obtained . . . . . but these bacilli may also be present in the milk of tuberculous cows presenting no evidence whatever of disease of the udder, even when examined *post-mortem*. Further, the milk of tuberculous cows not containing bacilli as it leaves the udder may, and frequently does, become contaminated with the fæces or uterine discharges of such diseased animals." Outstanding, also, among this literature, is the work of Delépine (2) who had made a complete

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survey of the milk supply of Manchester during the years 1897-1913 and had shewn that while in the first two years of the survey the percentage of milk samples showing tubercle bacilli was 17·2 per cent., the average percentage over the whole period was 8·7 per cent. He also traced the source of tubercle bacilli in a larger number of samples and obtained the following results:—

Tuberculous udders the cause of infection	78·6 per cent.
Tuberculous udders probably the cause of infection	16·0 „
Nothing definite to connect infection with the state of the cow	5·2 „

(276 farms).

Again, the Medical Officer of Health of the London County Council (3) had shown that between the years 1907 and 1913, 13,321 milk samples had been examined for the presence of tubercle bacilli and 9·9 per cent. of these had proved positive. In New York, Grund and Wilcox (4) had shown that 11·5 per cent. of the ordinary market milk samples examined by them were positive and Campbell (5), investigating the prevalence of tubercle bacilli in the market milk of Philadelphia, found that 13·8 per cent. of the samples of unheated milk and 8·3 per cent. of the samples sold as pasteurised milk were positive.

Working on the significance of streptococci in milk, Bergey (6) had shown that 80 per cent. of the samples of ordinary market milk examined by him contained streptococci. Brüning (7), in Leipzig, had shown 93 per cent. of the samples examined to contain streptococci. Savage (8) working on this same problem, obtained streptococci in 47 per cent. of cases. Much more material has been collected, but it is not necessary to adduce further evidence to show that these organisms were widely distributed in the milk of most countries. In view of their prevalence in milk and because streptococci are responsible for a number of diseases in man, the next problem to be tackled was the source of such organisms and the part they might play in certain human diseases. While a considerable amount of work had been done in this connection, and while the works of Savage (9), Rosenow (10), Muller (11) Heinemann (12), Hamburger (13), and others had shown that in certain cases the streptococci sometimes to be found in milk were responsible for outbreaks of disease among human subjects, it is to be admitted that this subject is even yet little understood and much more work has yet to be done before the problem may be solved. Following the work of M'Fadyean and Stockman (14) in this country and Schroeder and Cotton in America (15), evidence was accumulated to show the prevalence of the bacillus of contagious abortion in the ordinary milk supply, and in view of what is to be said later it is interesting to record an extract from M'Fadyean and Stockman's report. They state: "Although it is hardly germane to the present enquiry, we think it advisable to point out that since the bacillus of cattle abortion is pathogenic for so many species, the possibility of the human female being infected should not be lost sight of."

On the subject of milk-borne epidemics conclusive evidence had been obtained that they were not in frequent in occurrence. In 1912 Savage (16) summarised the epidemics which had been regarded as being due to milk in this country. Out of the nineteen epidemics he investigated, the source of infection, although most certainly due to milk, could not be precisely traced, but the remainder of the epidemics (ten) were traceable in most cases quite definitely to a diseased cow. These epidemics included outbreaks of tonsilitis, diphtheria and septic sore throat. Numerous other outbreaks had been reported from America by Copps and Miller (17), Trask (18), Winslow (19) and others, including serious epidemics of septic sore throat, diphtheria, scarlet fever and typhoid fever.

Following closely upon the results of these investigations one would expect to find a corresponding development of our knowledge with regard to the method of handling milk and, while a considerable amount of work had been done in America in this connection, it was not until the year 1912, with the setting up of the National Institute for Research in Dairying, that such problems received due consideration in this country. It is interesting to note further, that the problems which were first investigated at this Institute were in connection with the stilton cheese-making industry (20) where serious loss was occurring through discolouration of the cheese. The results of these inquiries revealed the fact that a "dirty" milk supply was in many cases responsible for defective products. Working on the information obtained, further inquiries (21) were set up in certain districts into the losses and sources of loss in the whole milk industry, when it was found that through dirty methods of production the annual loss by "souring" alone was 1—2 per cent of the whole supply. If we take the annual production of milk in England and Wales at that time at 1,000 million gallons and the annual loss by "souring" at ·5 per cent. then the total monetary loss, taking the price at 1s. per gallon, would be £250,000, together with the loss of a very valuable foodstuff. The facts that faulty methods of production and handling which allow the entry of extraordinary large numbers of bacteria were responsible for such serious loss and that the same carelessness or ignorance which permits the admission of many micro-organisms may be the cause of the entrance of pathogenic varieties, were sufficient reasons for carrying on and developing this type of research work, which has already proved its worth (22).

In view of the very far-reaching results that followed in these two domains which I have mentioned, it is not surprising to find that in the year 1915 with the passing of the Milk and Dairies (consolidation) Act legislative measures were introduced calculated to allow of efficient control of the milk supply of our country and also provided for the future by allowing for the incorporation of the results of further research. Unfortunately, as you know, on account of the political position of the country at that time, the operation of this Act was postponed until 1922 when, by the passing of the Milk and Dairies (Amendment) Act, 1922, which made it a more comprehensive article, it was postponed for a further period and came into full operation in the year 1925. In the interval, however, the progressive dairy farmer who, by dint of superior knowledge and ability, had secured a demand for a superior and safer article, was recompensed for his labours first of all in the year 1917, when the Ministry of Food in co-operation with the Ministry of Health issued special licences which

allowed such producers to charge an extra price, and then later by the passing of the Milk (Special Designations) Orders in the years 1922 and 1923. Since 1925 the two important Orders that have been issued are, as you know, the Tuberculosis Order of that year (issued under the Diseases of Animals Act) and the Milk and Dairies Order of the following year.

While it is not possible in such a paper as this to give a comprehensive critique of this latter Order, with which, of course, I am more particularly concerned, it may be stated that its general object is the protection of the community by the application of the principles of sanitation and cleanliness viewed in the light of present knowledge and that perhaps the most important points of criticism are (a) that the development of an efficient system of routine inspection of cows and cowsheds and the periodic bacteriological examination of milk samples is not made obligatory but is permissive only, with the effect that Authorities may allow the Order to go unattended until some Authority in whose area the milk from such uninspected cows and cowsheds is being consumed, reports the presence of disease-producing organisms—in particular, the presence of tubercle bacilli, which organisms it may have taken six weeks to detect: even then the "consuming" Authority is to some extent at the mercy of the "producing" Authority, inasmuch as it is stated that the immediate inspection of suspicious cows and premises has to be carried out by the Authority in whose area the milk is produced; (b) that in many cases the producer of milk is not under the direct supervision of the Authority in whose area the milk is consumed, with the effect that such Authorities are made to rely upon the efficiency of others in whose area the milk is produced and may approach the producer only through this source, and (c) that in view of the necessary indefiniteness of the Order in respect of the standard of sanitation and cleanliness to be attained in any district, it is essential that the officials of the Local and Sanitary Authorities in whose hands the administration of the Order is placed should have more than a working knowledge of the subject of hygiene in relation to milk production. Unfortunately, until now, this has been the exception rather than the rule and the administration of the Order has in many cases gone unattended, awaiting the education of the officials or the appointment of new officers specially qualified for the purpose.

It has recently been stated that "milk is the subject of much legislation of little effect." Unfortunately there is more than an element of truth in this statement, but the reasons for such a position are not difficult to find. In the first place, as is usual, the findings of the specialist take some little time to imprint themselves on the mind of the layman, who is always sceptical about "something new" and in this instance we happen to have as laymen the most conservative class of the British public—the British farmer. It may be said that this position has been further complicated by many milk dealers and distributors who, while accepting the results of certain branches of research and realising therefore the necessity of safeguarding the milk supply, have ruthlessly misinterpreted the results of other branches (which are even as yet not fully understood) because it suited their case, and have therefore held out to the British public in general that the best and only safeguard for the milk supply was "Pasteurisation" (without definition or qualification!) irrespective of whether the milk was produced in a palace or a dung heap. Secondly, as I have already mentioned, in our endeavour to bring into operation as quickly as possible the results of research, we have developed a legislative system which, in many cases, we are for the present incapable of administering. And for this position, you, as veterinary surgeons, are partly responsible, for what body is more particularly suited to develop and administer our policy with regard to milk production and control than a body of veterinarians? And yet, so far as I am aware, through lack of organisation, you have allowed this most important problem to go unattended, to discover that it is now in the hands of a body of people who, in many cases, have not been sufficiently educated in their subject and who feel compelled at last to ask for your assistance.

Following closely on the track of legislation, the education of the milk producer and distributor has most certainly been of great service in lessening our burden. The Ministry of Agriculture, in co-operation with Agricultural Education Authorities, has been responsible for most of this work through the setting up of "Clean Milk" Competitions and through organising courses of instruction in "Clean Milk" production. As a result of this work it may be stated that few, if any, dairy farmers in this country have not learned of the help and guidance they may receive (free of charge) if they will only endeavour to produce the type of article that it should be their moral duty to offer for sale. It is interesting to note in this connection that in place of sixteen licence-holding producers in December, 1918, there were in September, 1928, seven hundred and forty-five producers of graded milks, including one hundred and forty-six "Certified," one hundred and seventy-eight Grade "A" T.T., and four hundred and twenty-one Grade "A" licences. The quantity of milk produced under these licences is, of course, only about 1 per cent. of our raw milk supply, which position, after so many years of educational work, is surely a very serious one and no doubt is attracting the serious consideration of the controllers of our milk policy. While this educational work has been in progress it is true that the British public has been reluctant to respond to enlightenment. Our annual consumption of milk has not increased beyond a third of a pint per head per day, while in America, to give only one instance, the daily consumption of milk is about one pint per head per day. In view of the evidence which is constantly being placed before them, one cannot imagine the British public to be so slow in response or to lack the intelligence sufficient to enable it to realise the value of liquid milk as a food, and more particularly the value of milk of a high hygienic value, and one may therefore be forced to the conclusion that either the people of our country cannot afford to pay this extra charge which is made for the superior article, or, being rather more subtle than we may imagine, they have decided that after all our graded raw products cannot be guaranteed free from *all* disease-producing organisms. Perhaps they know that even "Certified" milk may act as a carrier of disease. As a matter of fact, the true position probably is that the British public

are supplied with such conflicting evidence as to what type of milk they should drink that they are awaiting the time when some degree of unanimity of belief may be expressed by those people responsible for the development of our milk policy. On the one hand, some of the highest officials in the medical and veterinary professions advocate the use of pasteurised milk, while certain other officials, who exert considerable influence with the milk producer, denounce the principle and advocate the use of "clean" raw milk. Until a policy in this connection is agreed on by all parties concerned we cannot hope to make much headway with the consumer.

It is not possible for me to trace all the research in connection with milk hygiene which has been in progress during the last few years, but it may be of interest to you if I record the results of some few workers and show the possible influence such work may have on our future milk policy.

For many years now opinion has been divided on the question of the pasteurisation of milk and until recently it must be admitted that "much could be said on both sides" because confusion has arisen, in the first place, with the use of the term "pasteurisation" which, without special definition, merely implies that the milk has been heated to a temperature that probably has not reached the boiling point of water and that it has been subsequently cooled. Secondly, no one has been sufficiently ingenious to supply us with a concise definition of the term "milk" and the words "clean," "dirty," "poor," etc., etc., which are consciously or subconsciously used to qualify the term, are in themselves of little use in expanding its meaning and contracting its application.

The views of those who advocate the use for human consumption of what they choose to call "clean" raw milk are based on the beliefs that (a) milk produced under clean conditions (conditions such as are indicated in the Milk and Dairies Order) may be consumed with a reasonable degree of safety, (b) pasteurisation of milk (even as defined in the Milk (Special Designations) Order) lowers the feeding value of the milk, (c) pasteurisation does not in all cases destroy pathogenic organisms and that even after processing the milk may be again contaminated and (d) pasteurisation does not tend to discourage filthy methods of production.

With reference to the degree of safety with which "clean" raw milk may be consumed, I should like to draw your attention to some recent researches in this subject. It is known that, despite frequent and careful clinical examination of cows, certain pathogenic organisms may be present in the udder of the lactating cow for considerable periods of time and may escape detection. Thus, while of infrequent occurrence, we do find reported cases of tubercle organisms being detected in Grade "A" milk and on a more detailed examination being made we find the source of infection is the udder of a cow which has been, and is again, carefully examined by the experienced clinician who can find no evidence of tuberculous lesions. How often this may occur is not known and while on the authority of reliable veterinarians it is believed to be very infrequent, it must be effectively dealt with if we continue to advocate the use of Grade "A" milk. Again, the recently published works of Carpenter (23), Belyea (24), Kistensen (25), Kreuter (26), and others show that in certain countries the causal organism of contagious abortion in cattle is capable of producing a disease in the human subject "not unlike typhoid fever" and Harrison and Wilson (27), working in this country, have stated that "infection with the organism which causes contagious abortion in cattle may now definitely be added to the list of our endemic human diseases." In view of the widespread occurrence of *Brucella abortus* in milk (Wilson and Nutt (28) have recently shown it to be present in 8·8 per cent. of the samples of mixed milk examined by them) raw milk enthusiasts may immediately be faced with the difficulty of devising ways and means of eliminating such organisms from all our graded milks. Finally, the researches which are in progress on the significance of the group of organisms known as streptococci, while still very incomplete, would seem to indicate that certain types which may pass into "clean" milk from udders which appear normal on clinical examination may be of some significance in certain human diseases.

In connection with the effect of pasteurisation on the feeding value of milk, there appears to be conflicting evidence and as far as I can gather the main arguments against the process are (a) that through certain physical and chemical changes induced by the heating process the digestibility of the milk is lowered and (b) that the anti-scorbutic vitamin is in part or wholly destroyed Where, however, the term pasteurisation implies the heating of the milk to a temperature of not less than 145°F. and not more than 150°F. for a period of thirty minutes and then the immediate cooling to not more than 55°F. it would appear that these two factors had no effect.

At various times experiments have been carried out in order to judge the relative merits of heated and unheated cows' milk as a food. In most cases this work has been carried out by the use of laboratory animals and while it might appear that this was a satisfactory method of obtaining results in relation to children, it is certain that the circumstances which arise, such as the varying conditions of young animals at birth, their rate of growth, etc., markedly vitiate the value of such work. In America, and I believe also in this country, the effect of feeding infants on raw and pasteurised milk has been compared, when the "pure" raw fresh milk has been proved to be infinitely superior. The results of experiments carried out by Dr. Corry Mann for the Medical Research Council and also by the Scottish Board of Health (29) would seem to negative these findings. This latter body carried out feeding experiments at seven different centres. At five of these pasteurised milk was used and at two "certified" milk and apparently the superiority of the certified milk over the pasteurised milk has not been established, since no mention is made of it in their report.

That the commercial pasteurisation of milk does not in all cases destroy pathogenic organisms is well known. The tubercle bacillus is the most resistant pathogen commonly found in milk and the efficiency of pasteurisation is governed directly by the thermal death point of this organism. Under ideal conditions the concensus of opinion has it that a temperature of 62·8°C. (145°F.) for thirty minutes is sufficient in all cases to destroy the virulence of this organism. Unfortunately, under commercial pasteurisation ideal conditions do not always

exist and it has been shown by Meanwell (30) that slight defects in the process, such as the coagulation of small portions of milk, may make conditions suitable for the tubercle bacillus to retain its pathogenicity. This point, together with many others, including the significance of thermophilic organisms, which under certain conditions are found to multiply rapidly in milk during the pasteurisation process, are receiving the serious consideration of many American workers who realise that the commercial pasteurisation process is by no means perfect, but believe that with further research they will be able to perfect the process, and indeed have now so much confidence in the methods which they recommend as to state that "pasteurisation of milk is the most practicable and rapidly carried out measure for the safeguarding of the milk supply."

Finally, with a producer and distributor uneducated in the scientific production and handling of milk, it may be true that to advocate pasteurisation of milk encourages filthy methods, but with our educational system and, if necessary, by means of the legislative measures now in operation, it is possible to secure for the British public a milk supply produced and handled under the strictest hygienic conditions, and with the incorporation of an efficient system of pasteurisation to give a guarantee as to freedom from disease-producing organisms.

REFERENCES.

(1) Final Report of the Royal Commission on Tuberculosis.
(2) Report of the M.O. to the Local Government Board, 1908-9.
(3) Report of the M.O. to the London County Council, 1913.
(4) "The Frequency of *B. tuberculosis* in the Market Milk of New York City," Department of Public Health, New York, 1912-13.
(5) Report of the Bureau of Animal Industry, 1909.
(6) "The Prevalence of Streptococci in Cow's Milk," *Am. Med. Jour.*, 1901.
(7) "Untersuchungen der Leipziger Marktmilch," 1905.
(8) *Journal of Hygiene*, 1906, vi., 123.
(9) Report of M.O. to L. G. B., 1906-7.
(10) *Jour. of Infec. Diseases*, 1912-13, xi., 338.
Jour. of Infec. Diseases., 1915, xvii.
Jour. of Am. Med. Assoc., 1912, lviii.
(11) "Ueber die Streptokokken der Milch," *Arch. f. Hyg.*, 1906, lvi.
(12) *Jour. of Infec. Diseases*, 1907, iv.
Jour. of Infec. Diseases, 1906, iii.
(13) *Jour. of Am. Medic. Assoc.*, 1912 i. viii.
(14) Report by Dept. Comm. appointed by Board of Agric. to Inquire into Epizootic Abortion, 1909.
(15) Report of the Bureau of Animal Indus., 1911.
(16) "Milk and the Public Health," 1912.
(17) *Jour. of Am, Med. Assoc.*, 1912.
(18) *Dept. of Hyg. Wash. Bull.*, 1912.
(19) *Boston Med. and Chir. Jour.*, 1911.
(20) *Jour. of Board of Agric.*, vol. xix., 1912.
(21) Min. of Agric and Fish. Research Mono. No. 1 1925.
(22) Public. from Nat. Inst. for Research in Dairying.
(23) *Jour. Am. Med. Assoc.*, 1926, lxxvii.
(24) *Jour. Am. Med. Assoc.*, 1927, lxxviii.
(25) *Centr. Bakt.* 1, Orig. 108, 89, July.
(26) Abst. *Le Lait* 9, 81, p. 53. Jan. 1929.
(27) *Lancet*, ccxv. Dec. 29, 1928.
(28) *Jour. of Path. and Bact.*, 1926, xxix. 141.
(29) *British Med. Jour.*, Jan. 26, 1929.
(30) *Jour. of Hyg.*, xxvi., October, 1927.

DISCUSSION.

Dr. FRANKS (Deputy M.O.H., Durham), complimented Mr. Henderson upon his paper and commented upon the necessity for a pure milk supply. There were, he said, difficulties so far as the Public Health Department was concerned, but he thought they all knew what these were without his saying anything about them. The Chairman (Major Peele) knew as much about these difficulties as anybody, for he was with them every day. They of the medical profession welcomed any help that could be given by the veterinary profession. So far as these matters were concerned the two professions could not work in watertight compartments. No question of jealousy should arise, though he regretted to say they had seen evidence of it—not lately, certainly, but in years gone by. He was pleased to find that that was disappearing and he believed that, in a short time, it would have gone altogether.

Dr. DAWSON (M.O.H., Darlington) said they had had a most illuminating and comprehensive survey of this important subject and had been given food for thought, more particularly concerning the necessity for co-operation between veterinary science and medical science in the public health service. The public wanted to know what they were paying for. When they bought milk they wanted a sound article. Were they getting value for their money? The bacteriologist and the analyst were out to direct and advise the medical side and the veterinary side as well as those who actually produced the milk. Could they co-operate in any way to improve any position in which they might find themselves? In Darlington, three years ago, he was forced to take a step, which he did with fear and trembling. That was to pasteurise milk, and he was very chary about giving official recognition to the venture. However, by linking up the farms from which the milk came and by keeping close supervision over the pasteurising, he was proud to say that Darlington had pasteurised milk and that the benefit of it reflected in the annual returns was far beyond anything of which he had dreamt. There was a great improvement in the health of the people, particularly in that section of the population which was using the milk most—the infantile population. The infantile mortality return was a record for the North of England.

Mr. THOMAS PARKER congratulated Mr. Henderson upon his excellent paper, which, he said, covered an extensive survey of the history of what had been attempted in the solving of problems concerning the production of a clean milk supply. After hearing the last two speakers there came into his mind two questions, relative to the public health aspect of the subject, which appeared of some importance. Firstly, could we not have an absolutely wholesome and sound milk supply which did not require any treatment whatever? Secondly, must we rely on a supply in connection with which it was absolutely imperative that they should, as Mr. Henderson had remarked, pasteurise? It was quite conceivable, of course, that when supplies were received from various districts, the control of which was perhaps not sufficiently complete so far as prevention from contamination of the milk after production was concerned, it might be necessary to deal with them in some way as a precautionary measure, so that when the milk reached the consumer it would be comparatively safe. His own view, and he believed that of Public Health, was that there was no better milk than that which had been found absolutely pure at the source and had been conveyed to the consumer in that condition. There were two reasons why it was absolutely essential that the subject should be pursued to its logical end. In the first place, it had a direct bearing on public health and in order to appreciate that fact it only was necessary to visit one or other of the large sanatoria and witness the distressing affects of bovine tuberculosis amongst the patients, chiefly children, who either died or left the institutions maimed for life. Secondly, the milk problem had an equal bearing on agriculture, inasmuch as when dealt with at the source much spreading of disease was prevented. These views, of course, assumed that the

most important disease known at the present time concerning milk was tuberculosis, and this was supported by the fact that greater losses occurred in agriculture and more deaths and illness occurred in the human subject from this disease than from any other which commonly affected the soundness of the milk supplies. Mr. Parker then went on to illustrate the seriousness of the widespread infection by stating that of thousands of samples of mixed milk collected at railway stations at such centres at Glasgow, Edinburgh, Birmingham, Leeds, Manchester, Newcastle-on-Tyne and other large towns, the percentage of those found tuberculous averaged about 8·5. This demonstrated the widespread distribution of the disease throughout the country. Being aware of this and the fact from his own experience in the examination, *post-mortem*, of hundreds of fat dairy cows, that upwards of 80 per cent. were tuberculous in some degree, he considered the problem from every point of view much more difficult than was generally appreciated. He must not be misunderstood. When he stated that a large percentage of dairy cows were tuberculous, he did not infer that a large percentage were giving tuberculous milk or that on slaughter a large percentage of the carcasses would have to be condemned. Notwithstanding this, however, he was of opinion that every animal tuberculous in any degree must at least be regarded as a potential danger. Although fully aware that a tuberculous cow, not showing clinical signs of the disease, might give tuberculous milk, he had found that regular and frequent clinical examination would very materially assist in safeguarding the milk supply. For example, over a period of years he had been privileged to control a large dairy herd of Shorthorns. During that period, besides applying the tuberculin test from time to time for the purpose of segregating the reactors from the non-reactors, he had regularly inspected the animals for the purpose of eliminating any exhibiting suspicious signs of the disease, and also had had these inspections checked by periodically submitting samples of the mixed milk from the herd to guinea pig inoculation, but up to the moment none had been proved to be tuberculous.

Before closing his remarks, Mr. Parker stated that he would like briefly to refer to the legislation dealing with the subject. Part IV., section 8 of the Milk and Dairies Act stated: "Every County Council and County Borough Council shall cause to be made such inspections of cattle as may be necessary and proper for the purposes of the Act and of this Order," and sub-section 4 of section 15 stated: "Any inspections of cattle made in pursuance of this Act or any Milk and Dairies Order shall be carried out by a veterinary inspector or other properly-qualified veterinary surgeon."

Mr. Parker then said that all the aspects of the subject to which he had referred went to show, as Mr. Henderson had stated, the great necessity there was for a regular and frequent inspection of cattle, and dairy cattle in particular. If they could be certain that milk-producing animals were free from disease then they would know that a considerable cause of suffering in the human race, particularly amongst young children, had been wiped out. He would repeat that they must not rest satisfied with pasteurisation as a means of dealing with the subject; they must deal with it at the source. He believed that if they carried out the whole of the conditions as laid down in the Milk and Dairies Act and Order, a very great step would have been taken towards the production of a wholesome milk supply. Then and then only would they be in a position to advocate, with emphasis, "Drink more milk."

Mr. P. Snaith said they should put emphasis on clean milk. With regard to Grade A milk, he was afraid it would be, in the present state of public opinion, in danger of over-production.

Referring to the spread of disease, Mr. Snaith said the local Medical Officer of Health once wrote intimating that there had been many cases of scarlet fever which they had been able to trace to a particular dairy. At the request of the M.O.H., he (Mr. Snaith) examined all the cattle but found nothing from a veterinary point of view. He observed, however, that the cows were not clean about the legs or the udders. He asked the farmer where the water supply was and found that the animals plodged through a ditch into which sewage from a row of houses was discharged and that the cows were acting as "carriers" of the disease. They had the ditch fenced off and no more cases had been reported since then.

Dr. Dawson (M.O.H., Darlington) remarked that he did not assume that pasteurisation was ideal by any means, but one big point in favour of it was the fact that people were getting a cheap, safe food supply at 2½d. per pint. The dairies from which this milk was taken for pasteurising were under his supervision and the milk underwent a bacteriological examination before the pasteurising was proceeded with.

Mr. T. M. Mitchell said that Mr. Parker's point seemed to be that adequate clinical examination of cows was a good thing. He supported that. During the last four years he had examined the whole of the cows in the Borough of Sunderland, where there were twenty-two herds comprising about 400 cows. During those four years samples had been taken regularly—two from each herd per annum—and in those four years during which regular veterinary examinations had taken place they had yet to get their first positive tuberculous sample from a dairy in Sunderland. That in itself was sufficient argument for the advisability of clinical examination.

Dr. Franks stated that, with regard to slaughtering, if they found the slightest clinical symptom they should slaughter at once and not wait to test. He should like to see the ordinary supply of milk put on a higher and better standard. There was great room for research work with regard to streptococci, which might be found in milk.

The Chairman (Major H. Peele) thanked Mr. Henderson and remarked that there seemed to be an enormous amount of propaganda work to be done, more particularly through milk producers. But the difficulties of getting the ordinary dairyman to appreciate what was really meant by clean milk were very great. He believed that if the regulations were carried out thoroughly everybody would be producing clean milk. The difficulty was to get them to do so. The clinical inspection of dairy cows was very important.

Mr. Henderson replied briefly to the discussion.

From The Veterinarian, April, 1828.

The Stethoscope.

To the Editor of The Veterinarian.

Sir,—In the course of your extended practice, have you made use of the stethoscope in diseases of the chest?

Our patients cannot tell us what they feel; nor does the pulse, nor the heaving of the flanks, nor the injection of the schneiderian membrane, nor the heat of the breath, nor the coldness of the extremities, at all times indicate with sufficient accuracy the degree of inflammation, or the period when congestion begins to take place.

It is of the utmost importance to the formation of a just prognosis, and the safety of the animal, that we should know whether there be inflammation of the mucous membrane of the lungs, and to what degree it exists; whether the air-cells are becoming impervious, or a deposition of fluid is commencing between the pleuræ.

The stethoscope applied to the thorax of the horse will give the murmur of the healthy lung during each act of inspiration, and expiration. I am persuaded that I have, more than once, heard this noise, becoming more sonorous with the increased action of respiration, and again returning to the natural murmur when this inflammation had subsided, and absolutely cease when congestion had begun; and cease in some spots, and strengthen in others, when

(*Continued at foot of first column next page.*)

Notes on an Outbreak of Johne's Disease.*

By T. C. Fletcher, M.R.C.V.S., Sheffield.

I have more than a suspicion that our worthy Secretary (Mr. Tweed) desires me to introduce this subject in order that he can bring before you a test, with which he has experimented in collaboration with me, for the detection of Johne's disease before the clinical symptoms become well marked.

I myself have been struck by the increasing prevalence of this disease, and as it is an acknowledged fact that the early diagnosis of the disease and elimination of the affected animals appears to be the only safe way of stamping it out, it behoves our profession to spare no trouble to help those who are introducing any diagnostic agent.

Advanced cases of Johne's disease are known to disseminate the organisms on pastures and are therefore an important cause of the spread of infection. It is not definitely known at what stage of the disease the bacilli are first voided with the fæces, but it is possible that the greatest infection takes place when the advanced stages have been reached.

The diagnostic agent that Mr. Tweed and I have been using for diagnosing the disease is "Johnin" prepared by Mr. G. W. Dunkin, M.R.C.V.S., D.V.H., of the National Institute for Medical Research, Farm Laboratories, Mill Hill, London, and although I have used it on many occasions, it has been generally in conjunction with Mr. Tweed and I shall leave him to give details of its use.

The outbreak in question commenced in October, 1927, when the first animal became affected. The subject was a two-year-old heifer and from the history of the symptoms given us by the owner we presume that this animal suffered from Johne's disease. She had continuous diarrhœa and died from emaciation.

A month later No. 2 animal, another heifer of the same lot, commenced with continuous diarrhœa accompanied by progressive emaciation. She was seen by us and a test for Johne's disease and a tuberculin test were applied. The Johne's test was positive and the tuberculin test negative. Slaughter was advised and carried out on December 30th, 1927. *Post-mortem* was made and Johne's disease confirmed by microscopic examination of smears from the thickened mucous membrane of the small intestine. No lesions of tuberculosis were found in this carcase.

In February, 1928, No. 3 animal, a four-year-old cow, came under observation. She had been suffering from intermittent diarrhœa and losing flesh for a few weeks previous to our examination. The tuberculin test was applied and gave a positive reaction in this case. Johne's tests were negative and a microscopic examination of the fæces for worm eggs was also negative. In spite of these, Johne's disease was diagnosed from the clinical symptoms, but the owner did not slaughter this animal and she died in the early part of May, 1928. A *post-mortem* was made. There was no typical wrinkling in this case at all, but there were streaky, plum-coloured areas on the mucous membrane. A microscopic examination of smears from the mucous membrane of these areas, contrary to expectation, showed an enormous number of Johne's bacilli.

In March, 1928, No. 4 animal, an eighteen-months'-old bullock, which had been housed in a loose box, was put into the shed where the three previous affected animals had been stalled along with ten other cattle of varying ages.

The farmer informed us that this bullock was perfectly healthy until about three weeks after he was stalled in this shed, when he commenced with intermittent diarrhœa and gradual wasting of flesh similar to the others. We know from our visit a month previously that this bullock appeared healthy. Slaughter was advised, no tests being applied. *Post-mortem* revealed acute inflammation of the mucous membrane practically throughout the large and small bowel. The wall of the small intestine was thickened and the mucous membrane covered with inflamed rugæ which would not obliterate by stretching, characteristic of Johne's disease. We were unable to find Johne's bacilli microscopically on *post-mortem*, but there is no doubt but that this was typical Johne's wrinkling. No lesions of tuberculosis could be found in the carcase.

On May 22nd our attention was called to No. 5 animal, a first-calf cow, at the same farm, she having commenced to show similar symptoms. The farmer noted that she had done badly for some time past and had intermittent diarrhœa. Wasting of the muscles of the thigh was becoming marked. Both a tuberculin and a Johne's test were applied and both gave doubtful reactions. Slaughter at once was advised. The *post-mortem*, made on May 28th, showed one small calcified tuberculous lesion in a mesenteric gland. No other tuberculous lesions could be found in the carcase. The wall of the small intestine was thickened, and the mucous membrane was wrinkled—typical of Johne's disease. A microscopic examination was made and a few short bacilli, indistinguishable from Johne's bacilli, were found.

We made full enquiries into the feeding and water supply of these animals, as the loss of five animals in a period of eight months was somewhat alarming. We found that infection had been brought on to this farm during the past year, as no case of Johne's disease had been noted at this place before.

The animals had been sent last summer and the previous one to rented grazing, but all the animals did not go to the same pasture, so we suppose that infection may have been obtained at either of these places and that subsequent infection of the other animals took place at the farm

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(*Continued from previous page.*)

congestion has partially taken place and the labour of other portions of the lung was increased to supply the deficiency; and likewise cease, but an obscure undulatory pulsation remaining, when an effusion has commenced.

I have likewise fancied that I have obtained a clear conception of the nature of broken and thick wind.

I would rather, however, at present, appeal to those who may have made more extensive use of this instrument than I have done; and would request my brother veterinarians to try its power. I do not think that they would be disappointed.

Should no other person take up the subject, it shall be resumed hereafter by V. S.

* Presented to the North Midland Division N.V.M.A., at Sheffield, on 8th March, 1929.

where all the animals were housed for the winter. The affected animals gave no indication of the justification for the grazing belief as to the cause of the disease, owing to the indefinite period which elapses from the time of infection to the onset of symptoms in this disease.

A probable predisposing cause of infection was the pond from which all the animals drank. This was adjacent to a tar macadam road and received drainage from it and also from the manure heap when wet weather washed the liquid from it into the pond. The water in the pond was very dirty and the analysis made by the City Analyst is as follows :—

"Solids in suspension,	Organic	118·0	per 100,000	parts.
	Inorganic	288·0	„ „	„
		406·0		
Solids in solution,	Organic	26·0	„ „	„
	Inorganic	53·0	„ „	„
		79·0	„ „	„
Chlorine		7·0	„ „	„
Equivalent to sodium chloride		11·53	„ „	„
Nitrites		none	„ „	„
Nitrates as nitrogen ...		none	„ „	„
Ammoniacal nitrogen ...		1·16	„ „	„
Albuminoid nitrogen ...		0·44	„ „	„
Oxygen absorbed in 4 hours at 80°F.		4·80	„ „	„
Poisonous metals (lead, etc.)		none	„ „	„
Tar acids		trace	„ „	„

Reaction to litmus, faintly alkaline.

"These results show the water to be a grossly-polluted stagnant water and in my opinion it is totally unfit for cattle."

All the affected animals drank from this pond, and whether this acted as a means of spread or a predisposing cause by making the animals unthrifty is open to question.

After this we decided to test the remainder of the herd and we got one doubtful reaction. The cow which showed the doubtful swelling was again tested a month later and gave a positive reaction.

No further losses have occurred on this farm and the cow which gave the positive reaction is at present showing no signs of Johne's disease, but observation is being made and the owner asked to notify us should any symptoms appear.

Discussion.

Mr. W. Tweed (Hon. Secretary) said: In the first place, I thought these notes on Johne's disease might interest you. It is a hobby of mine in my spare time to endeavour to satisfy my curiosity with regard to things which require further investigation and I must say I am indebted to the Sheffield veterinary surgeons for the interest they take in matters with me.

The outbreak described by Mr. Fletcher was a most interesting one and serves, I think, to point out the seriousness of the disease. To Major Dunkin we are indebted for his research work, and he has kindly supplied us with the diagnostic material which we have used in this outbreak and in any other cases met with in the city, and, as far as time permitted, careful *post-mortems* were made to check the results of the test.

Although the number of cases has not been sufficient to give a definite opinion on the value of the test, I think that it is one which should be used as soon as suspicion arises of the disease being present, and in many cases of diarrhœa of cows it has helped to justify further treatment if a negative reaction was obtained.

The test is applied in a similar manner to the intradermal tuberculin test and the two tests can be applied on separate places at the same time if care is taken to keep the materials separate or separate syringes are used. There are occasional cases of tuberculosis of the intestines met with, accompanied with diarrhœa and wasting, and one such case was encountered here a short time ago. In this outbreak differentiation from sewage poisoning was of more importance. In Cases Nos. 3 and 4 sewage poisoning might readily have been suspected from the lesions present if the other cases had not been examined microscopically, and in similar outbreaks before an opinion on sewage poisoning is given, such a procedure should be carried out, for, in my opinion, sewage poisoning *per se* is a very rare condition in cattle.

I should like to have your opinion on the predisposing causes of Johne's disease. In this outbreak I am inclined to think that the dirty water supply acted as a responsible factor and a change in the water supply and good feeding seems to have arrested the disease on these premises.

Mr. R. Hudson stated that he thought that an acute attack of diarrhœa due to a chill, *B. coli* infections, and secondary to retention of placenta, acted as predisposing causes. He would like to know the length of the period between infection and the time that the actual symptoms are shown. He had seen recoveries, but when the animals were put on pasture the disease seemed to recur. He used ounce doses of pulv. catechu mixed with half an ounce of Venice turpentine, given as a ball, twice daily. He thought cows should never be allowed to drink from swift-running water in winter time, as it was too cold for them.

Mr. T. Bowett related the experience of the loss of three of his own cattle last year, remarking that he found that animals often went wrong when brought into sheds during the autumn. He wondered if treatment of infected land with 20 lbs. copper sulphate (mixed with sand) to the acre would be useful as a preventative.

Mr. G. Green gave his experience of the disease and the hopelessness of disinfection for prevention. He agreed that one often saw the disease when animals were put in sheds from grass on to dry food. Intestinal antiseptic treatment had given him some success.

Mr. Tweed remarked that, in his experience, the best results in treatment were obtained by M'Fadyean's prescription, which consisted of iron sulphate and sulphuric acid. This treatment must be continued over some weeks and in some cases when this was done he had seen recovery.

Mr. G. J. Furness said he had met with a great deal of Johne's disease. He agreed that sewage poisoning did not occur to any extent and he had a case a short time ago where the farmer wanted to claim for the loss of cattle, but they were dying from Johne's disease and tuberculosis. In this case they did have a sewage-polluted water supply, which received the waste from six cottages. They had changed the water supply with beneficial results. He found that cattle preferred to drink clean water if they could get it.

Sheep Attacked by Baboons.

Four farmers in the Karroo district of South Africa have, within recent months, lost no fewer than 300 lambs, sheep and goats owing to the depredations of baboons.

It is stated that the baboons run in troops of between 50 and 150 in number, ignore the netting fences, and attack stock in broad daylight under the noses of the men on watch.

The Veterinary Record.

6th April, 1929.

R.C.V.S. REGISTER, 1929.

The Register of Veterinary Surgeons for 1929 is now published and is issued to Members of the College on payment of the Annual Fee of one guinea, which became due on the 1st of this month. It has been brought up to date, and contains a mass of useful information for veterinary surgeons, besides that which is of the utmost importance to all, namely the official and statutory list of names and addresses of all qualified veterinary surgeons.

In the endeavour to make sure that the addresses of Members were accurate the Registrar issued last year a form on which Members were asked to supply the necessary information for the Register and which form was to be returned by the 30th November. We learn that of nearly 3,500 forms issued only 1,245 were returned! This is an astounding instance of professional apathy. If the name of a veterinary surgeon does not appear in the Register, he is in strict legality not entitled to call himself either M.R.C.V.S. or veterinary surgeon. The presence of his name in the Register, is, indeed, the only legal proof of his qualification. And yet, only one-third of the profession care whether their names appear or not! How otherwise can we account for the neglect of the simple duty of returning to the Registrar the form giving the information asked for? How can we expect our Registrar to carry out his statutory duty to keep the Register as accurately as possible (Veterinary Surgeons Act, 1881, S.3 (i))—a task which involves an immense amount of work—if Members neglect to reply to his proper enquiries?

The Register shows a total membership of 3,476 as compared with 3,486 last year. The list of existing practitioners is also reduced from 59 to 51, so that there is a total reduction of 18 registered veterinary surgeons.

On page 297 of this week's issue appears a list of Members, R.C.V.S., in the finding of whose addresses the Registrar asks for the assistance of our readers.

Personal.

Appointment.—Mr. Robert Moore, M.R.C.V.S., D.V.S.M., has been appointed Junior Assistant Veterinary Officer for the City of Sheffield.

CLINICAL AND CASE REPORTS.

Malignancy.

By F. Chambers, F.R.C.V.S., Wolverhampton.

The subject of this note is a 12-year-old Golden Retriever. In October, 1928, it was noticed that there was an irregular mass growing from the lower lip and gum opposite the canine tooth on the left side. The upper canine had made a hole right through the centre of the growth. After examination, I expressed the opinion that the growth appeared to be malignant, but at the wish of the owner I removed it under a local anæsthetic. The mass was sent to Dr. Murray, of the Imperial Cancer Research Fund, who very kindly sectioned it and reported that it was a lympho-sarcoma and would undoubtedly recur. The wound healed well and on January 1st, 1929, there was no evidence of a recurrence.

On January 13th, a large swelling had appeared in the neck in the region of the posterior pharangeal gland. It was no doubt a secondary growth. This also was removed without great difficulty. It was as large as a cricket ball. Dr. Murray, who also examined this growth, also stated that it exhibited all the characteristics of the original. The wound healed fairly well and had completely closed by February 8th. On February 20th, it was noticed that a quickly-growing neoplasm had appeared at the original site of the primary, and a further growth under the skin at the back of the neck. I persuaded the owner to have the dog destroyed.

This case goes to prove the value of a histological examination. Strangely enough, when I saw the dog the second time and pointed out the correctness of Dr. Murray's prognosis, the owner was surprised. He had apparently misread Dr. Murray's letter and did not think that the growth would recur. It is unusual for such a long time to elapse—four months—between the removal of a primary from such a dense position as the lower gum, and the appearance of a secondary at the site of the original one. They usually come back very soon.

Absence of One Quarter of the Udder.

By R. S. Smyth, M.R.C.V.S., D.V.S.M., Harrogate.

I have recently seen a heifer with an udder composed of only three quarters. Her owner informed me that, as far as he knew, she had not had any disease which would account for the loss of one gland, and although I made a minute examination I failed to find a fourth teat or the site where a nipple had been.

The heifer, which had calved, gives milk from each of the teats. The odd quarter occupies the right side of the udder and appears to be slightly larger than either of the other two, both of which it over-laps to an equal extent. The teat is different in size and shape from the left fore and left hind teats and it does not seem to be analogous to either of them.

One frequently sees a cow with one quarter atrophied and one may occasionally meet with a cow that has more than four lactating quarters, but this is the first case of congenital deficiency in the normal number of mammary

glands that I have noticed during the routine inspection of a large number of dairy cattle.

Begg (*Encyc. Vet. Med. and Surg.* Vol. II), refers to two cases of total absence of the udder and states that the condition is exceedingly rare.

There is no information available to show that the "three quarter" udder in this instance is hereditary, or that it is due to any grave developmental defects, the heifer being normal in every other way.

Abnormal Foetus.

By W. T. Olver, M.R.C.V.S., Tamworth.

I enclose a photograph of a calf which may be of interest:—

I was recently called to a heifer in labour and found a breech presentation, but although both hind legs were secured and traction applied it was impossible to effect delivery. I informed the owner that the calf was a monstrosity and delivery impossible.

Of all the occupations which fill the hours of the busy physician, either at the end of the day's toil or between cases, there is not one of greater moment than his reading—medical or otherwise. Through his professional literature he may visit the world and see the work of his entire profession, or call upon the individual known to him personally or by reputation and observe the detail of a single procedure. *Long Island Medical Journal.*

There are so many qualified veterinary surgeons in Germany that Cologne University warns intending students against studying for the profession.—*Reuter.*

ABSTRACTS.

[The Commonest Forms of Actinomycosis in Domestic Animals and their Etiology. H. Magnusson (*Acta Path. et Microbiol. Scand.*, 5 (1928) No. 2-3, pp. 170-245, figs. 21). Ex. *Exp. Sta. Rec.* Vol. 60. No. 1.]

The author here includes reports upon 135 cases of disease in cattle and 273 in pigs collected and examined during the years 1922-1928 in Sweden. He has retained the old name actinomycosis, but shows that the cause of the disease is far from being uniform. "Only 41 per cent. of the cases in bovines were due to streptothrix. While bovine actinomycosis of the jaw, with its rarefying ostitis (48 cases), was almost always a streptothrix infection, and thus has still the right to bear the old classical name actinomycosis, 'wooden tongue' (22 cases) and actinomycosis of other soft parts, such as lymphatic glands, gums, hard palatal mucous membrane, mouth and skin, were for the most part an actinobacillosis (33 cases). In actinomycosis of the udder in cows (3 cases) it was always a staphylococcus infection and the process in an etiological respect identical with botryomycosis. In pigs the disease has only occurred in the form of actinomycosis of the udder, 181 cases, 66.3 per cent., being due to streptothrix and 41 cases, 15 per cent., being due to staphylococci. The granules from staphylococcus actinomycosis in pigs may at the same time exhibit clubs and capsules, and the process thus appears at one and the same time to be actinomycosis."

The author found that by the agglutination test it is possible to fix a differential diagnosis between actinobacillosis on the one hand and tuberculosis and streptothrix infection on the other. It is pointed out that actinomycosis of the tongue, œsophagus, larynx, and lymphatic glands may easily be mistaken for tuberculosis. It is considered probable, although not proved by tests on animals, that *Bacillus pyogenes* can also develop granules and be the cause of actinomycosis. The staphylococci isolated from an actinomycosis of the udder of a cow and of a sow are identical with the common suppurative staphylococci.

A list is given of 43 references to the literature.

A. L. S.

[A Double Intradermal Test for the Diagnosis of Bovine Contagious Abortion. Holtum (A. W.). *Jl. Comp. Path. and Therap.* 1928. Mar. Vol. 41. No. 1. pp. 25-53. With 5 figs. and 5 charts; June, No. 2. pp. 79-93. (15 refs.) Ex. *Trop. Vet. Bull.* Vol. 16. No. 4.]

The author prepares an antigen for intradermal injection as follows:—

Subcultures on agar slopes (pH 7·6-7·8) are incubated for 72 hours at 37°C. and then left in the dark at room temperature for 12 days. The growth is washed off in normal saline containing 0·5 per cent. carbolic so as to make a "thick suspension." The suspension is heated in a water bath at 65°C. for half an hour.

The suspension is then standardised to correspond with Brown's standard opacity tube No. 10. Gates' method gave a reading of 6 mm.

The technique of the test is as follows:—

An area of skin on the side of the neck is shaved and wiped with alcohol. 0·2 cc. of antigen is injected intradermally. In some instances thus suffices to produce a reaction, which is a diffuse warm painful swelling. The skin is measured before and during the test with ball-pointed calipers having an arc graduated in millimetres.

A thickening of the skin to twice its original measurement is considered positive.

Where there is no thickening a second dose is injected at the same place, and the first dose is looked upon as a sensitising dose. Sometimes the injection produces a small amount of necrosis of the skin. This, however, resolves itself. The bulk of the paper is made up of detailed accounts of tests carried out, and the author compares his results with those yielded by the agglutination test, greatly to the favour of the intradermal test.

[**The Acclimatisation of Imported Stock.** Edwards (J. T.). *Agric. Jl. India.* 1927. Sept. Vol. 22. No. 5. pp. 333-338. With 1 plate; and part 6. pp. 411-424. Ex. *Trop. Vet. Bull.* Vol. 6. No. 4.]

Acclimatisation is concerned with the characteristics relating to climate and soil, and, largely through the interaction of these two factors, the local resources of fodder supply.

The author believes that the main factor in connection with acclimatisation of imported cattle in India is parasitism. He points out that the diseases which are indigenous to India are for the most part capable of being controlled by intervention of man, when they make their appearance in imported animals, but that the propagation of western methods of domestication among imported and cross-bred animals leads to the appearance of those diseases which cause such enormous losses in Europe and other temperate countries.

The most important parasites concerned with acclimatisation are the piroplasms. The author gives a brief account of Babesia and Theileria.

He states that steps are being taken to overcome the difficulty of transmitting these parasites while inoculating against rinderpest by means of the simultaneous method, by using rinderpest virus passed into goats which do not harbour the intracorpuscular parasites of cattle.

Army Veterinary Service.

Movements of Officers.

Major J. S. Nimmo, D.S.O. is still incapacitated and unfit to resume duty.

Brevet Lieut.-Colonel H. E. Gibbs, D.S.O., has been granted sick leave from 14th March to 24th April, and is at present in the Sister Agnes Home.

Major W. M. Rouse is officiating as Officer in Charge, R.A.V.C. Records and Stores, during the absence on sick leave of Lieut.-Colonel Gibbs.

Major C. A. Murray met with an accident while out Drag Hunting and fractured his patella. He is at present in Cambridge Hospital, Aldershot.

Major J. Harrison is still unfit for duty, having been granted a further six months sick leave, up to the 18th September next.

Major C. W. Heane, who is due to arrive home from India on the 9th April, is being posted to Aldershot for duty.

DIVISIONAL REPORTS.

North of England Division, N.V.M.A.*

Annual Meeting at Newcastle-upon-Tyne.

The Annual General Meeting of the North of England Division, N.V.M.A. was held in the Agricultural Department, Armstrong College, Newcastle-upon-Tyne, on Saturday, February 23rd, 1929. The President (Major H. Peele, of Durham) occupied the Chair, and the attendance book was signed by Messrs. W. Lyle Stewart, T. Wilkinson, J. Davidson, R. Barker, H. Hicks, C. Nicholson, T. M. Mitchell, J. W. Rider, J. H. Taylor, C. G. Hill, H. S. Elphick, W. H. Blackburn, A. Scott, T. Parker and J. R. Rider, Hon. Secretary.

Visitors.—Dr. O. Charnock Bradley (President, N.V.M.A.), Dr. G. A. Dawson, M.O.H., Darlington, and Dr. Franks, Deputy M.O.H., Durham County.

Apologies for absence were received from Dr. J. T. Share-Jones (President, R.C.V.S.), Messrs. Isherwood, Hobson, Dawes, Christopher, Pickering, R. Simpson, Croudace and G. M. Mitchell.

Mr. D. W. W. Henderson, B.Sc., Armstrong College, opened a discussion on "Some Aspects of the Milk Supply." [We reproduce Mr. Henderson's paper on this subject, and the discussion which followed, elsewhere in this issue.—Ed.]

Poultry Diseases.

Mr. W. Lyle Stewart, Armstrong College, Newcastle, gave a demonstration on "Poultry Diseases."

In so doing, Mr. Lyle Stewart said:—

Probably most of you know that this Spring witnesses the inauguration of certain legislative measures which it is hoped will have a far reaching effect upon the poultry industry. The various enactments, which I shall briefly explain, are all part of a national scheme of egg marketing reform, and although they have yet to stand the test of time, there is no reason to think that they will have other than a very beneficial effect upon the home industry. As from February 1st, 1929, such people as have been approved as accredited egg packers are entitled to use the National Mark on packages of tested and graded eggs. Following upon this, certain other compulsory regulations affecting egg marketing will shortly take effect. For example, on and after March 1st, it will be an offence under the Agricultural Produce (Grading and Marketing) Act, 1928, for anyone to sell or offer for sale any eggs preserved by detectable processes—such as immersion in lime water, water glass or oil—unless each individual egg is marked on the shell with the word "Preserved." On and after April 1st it will be an offence under the Merchandise Marks Act, 1926, to import any eggs, or sell or offer for sale any imported eggs, unless each individual egg bears on the shell an indication of origin. From the same date all premises used for the cold storage and chemical storage of eggs must be registered for that purpose, and any British eggs that have been kept in cold storage or chemical storage, must be marked on the shell with the words "Cold Stored" or "Chilled" in the fomer case, and

* Received on 2nd March, 1929

"Sterilised" in the latter case, before they leave the storage premises.

In my opinion, it would be difficult to exaggerate the value of the new scheme, which is proving popular already. In Canada, it is interesting to note, the introduction of egg marketing reform, in 1921, was followed in the course of a few years by a very striking increase in the number of eggs consumed per head of the population. If anything approaching a similar demand is created in this country, we may look for the development of intensive poultry farming on scientific lines, and I foresee that the great limiting factor to expansion, disease among poultry, will assume greater importance. It is probably true that veterinarians are but seldom consulted regarding diseases of the poultry-yard, but nevertheless we must all be prepared to meet progressive poultry farmers and be able to advise with up-to-date knowledge concerning the prevention, cure or eradication of disease. It is with these thoughts in mind that I venture to bring to your notice one or two important poultry diseases, together with demonstrations of methods commonly used in diagnosis.

Bacillary White Diarrhœa. This is the most important poultry disease in Great Britain, and annually exacts a heavy toll of newly-born chicks, amounting in some outbreaks to a mortality of 100 per cent. The causal organism was discovered in America by Rettger and Harvey in 1908, and during the last twenty years an enormous amount of research has been undertaken in this country and in America, with the result that we are now in possession of reliable methods for combating the disease. It may be said that bacillary white diarrhœa is a controllable disease and I hope to show you methods which are used to detect the carrier hen. Although the mortality among infected chicks is very high, it is important to remember that all the affected chicks do not die. From a control point of view this fact is unfortunate, because if female chicks are affected and recover the organism locates itself in the ovary and the germs will appear in the yolk of eggs which are laid by such a bird when it becomes mature. The germ may also locate itself in the reproductive organs of recovered male birds. Fowls harbouring the germ in this manner are capable of spreading the disease and are known as carriers. Bacillary white diarrhœa infection in adult fowls does sometimes cause emaciation and death, but in general it may be said that infected birds cannot be distinguished by clinical means, nor does the fact that the infection is present in the ovary necessarily mean that such hens are poor layers, as bacillary white diarrhœa infection has been demonstrated in birds with excellent laying records. It is considered that only an occasional infected egg is laid by a carrier hen, but since it is impossible to detect infected eggs by other than cultural methods, the only rational method of combating bacillary white diarrhœa in chicks is to avoid breeding from carrier birds, both male and female. Fortunately, in the agglutination test, we possess a reliable means of detecting the carrier bird. Usually the test is only applied to fowls from which it is desired to breed, and it consists essentially of mixing varying dilutions of fowl's serum with a suspension of the causal organism—*Salmonella pullorum*—and noting the reaction after incubation. The sample of blood is obtained from the fowl by puncturing the wing vein and allowing two or three ccs. to flow into a glass tube. On reaching the laboratory the serum is withdrawn and the tests are put up, care being taken to avoid mixing the numbers. Most laboratories have their own special methods of carrying out the tests, and different workers have different opinions as to their interpretations. At this laboratory agglutination in a dilution of 1:20, with clearing in the higher dilutions, is considered positive. The reading of the test requires a degree of experience, and I am inclined to think that the rapid method of carrying out the agglutination test is superior to the slow method, inasmuch as the clumping of the organisms can more easily be seen. In the rapid method the serum dilutions are made in the usual way, but instead of incubating for twenty-four hours at 37°C., they are placed in a water-bath working at 56°C. By making use of this rapid method the result can be read in from five to thirty minutes, that is, before the clumped organisms fall to the bottom of the tube. So far we have not carried out a sufficient number of tests to feel absolutely sure of the rapid method, and we always control it with the slower method, but it appears reliable and we have had no confusing results.

In rack No. 1 are twelve tests which were put up yesterday morning and incubated overnight. These same twelve tests are now being cooked in this water-bath at 56°C., and you will shortly be able to see for yourselves how they compare. I can only hope meanwhile that I shall not be disappointed.

To sum up, then, it can be said that the only reliable method of controlling bacillary white diarrhœa is to eliminate the carrier birds, and the only reliable method of detecting the carriers is by the agglutination test. More than one test of course is necessary, but it has been shown in America that even one test, followed by the removal of all positive reacting hens, will greatly reduce the incidence of bacillary white diarrhœa among chicks bred from non-reactors. These tests are carried out at this laboratory, and full particulars will be sent to anyone who desires to make use of our facilities.

Fowl Pox. I do not intend to say much about fowl pox, because an excellent descriptive account of this disease, written by Doyle, appeared in the *Veterinary Record* a few weeks ago. The specimens which you see here were obtained by me from a severe outbreak of fowl pox which I encountered a short time ago, and you will see that they illustrate the different forms of the disease very well. You will note that the term fowl pox supersedes such names as bird pox, chicken pox, contagious epithelioma, roup, diphtheritic roup, avian diphtheria and canker, and the disease is not communicable to human beings.

Three clinical forms of the disease are recognised. Specimen No. 1 illustrates the wart-like nodules on the comb, wattles and skin of the head. You will notice they are black, while a few later nodules are yellowish in colour. The eyelids are also infected. This is the mildest form of fowl pox and if the lesions can be confined to the comb, wattles and eyelids, recovery usually occurs in two-three weeks. Treatment when adopted consists of strict isolation and cauterising the nodules with strong tincture of iodine. The head should also be submerged in an antiseptic solution to limit the spread of the disease to the mouth and nose.

The second specimen showed the head from an advanced mouth case. The whole of the mouth is completely clogged with a tough black tenacious membrane, which made swallowing difficult or impossible. At first the lesion consists of a greyish-yellow exudate which adheres very firmly to the underlying tissues. It may be removed but quickly reforms, and spreads over the entire oral cavity as in the present case. The smell from the lesion is extremely disagreeable and in most cases where the mouth is involved death occurs either from suffocation or from the absorption of toxic products produced by the virus.

Specimen No. 3 illustrates oculo-nasal lesions. In this form the nasal passages and sinuses of the head are obstructed by a muco-purulent discharge, and a similar kind of discharge gathers around the eyes.

One attack of fowl pox confers an immunity which varies in degree according to the severity of the infection. So far as I am aware, none of the methods of preventive inoculation which have been tried has met with much success, but the observance of simple hygienic precautions will prevent the introduction of the disease. The outbreak from which I obtained these specimens was caused by the introduction of a cockerel which happened to be in the incubative period stage of the fowl pox. The cockerel was placed in the breeding pen and the infection was soon spread to the hens, twenty of which had died at the time I visited the farm. The whole breeding pen became affected, with disastrous consequences for the hatching season. This points very forcibly to the necessity of isolating all newly purchased birds, or birds returning from laying tests, for one month before allowing them to join the healthy stock. During the period of isolation the comb, wattles and mouth should be examined periodically for the lesions of fowl pox. I am afraid that this simple precaution is not fully appreciated by many poultry farmers.

When all affected birds have recovered or been killed off, a thorough scraping, cleansing and disinfection of the house is required to kill the virus, which is very resistant. The infected runs ought to be top-dressed with quicklime or, better still, ploughed up.

Avian Tuberculosis. This specimen illustrates an advanced case of generalised avian tuberculosis, which I received for *post-mortem* examination a short time ago. Tuberculosis is a fairly common disease among fowls, and while it is perhaps more prevalent among older birds which have a free range around old farm buildings, I have also come across the disease in unexpected quarters. For example, this hen was sent to a laying trial and for some time put up (or if you like let down) quite a good show. Later it became dull and droopy and was operated on for emaciation of the crop. It never fully recovered and finally died. Tuberculosis was never suspected, but on *post-mortem* practically every organ, as you can see, was affected. The primary lesions are in the bowel wall and the disease is spread by the enormous numbers of avian tubercle bacilli which are shed in the droppings. From the fact that the disease may affect the ovary, there is also the danger of spreading the disease in the eggs from a tuberculous hen.

One cannot say that there are any very well-marked symptoms in the early stages of avian tuberculosis. A gradual loss of weight leading to emaciation and diarrhœa are suspicious. Affected fowls often show leg weakness. Sometimes the disease passes unnoted for many years before it is recognised, and on enquiry it is learned that fowls have died with similar symptoms for many years. Recently I encountered a case where a number of fowls had died about the same time and poisoning was suspected, but the trouble was diagnosed as tuberculosis.

The disease is very easily diagnosed on *post-mortem*, but it will save a good deal of searching if one knows exactly where to look for the bacilli. I find that the bacilli in smears are extremely plentiful from the gut lesions, whereas a good deal of searching is often required if preparations are made from the other organs. A good plan is to incise a gut nodule with a clean scalpel, gently scrape the wall near the periphery of the lesion, and transfer the material to a clean slide. Only a small quantity is required, and the smear must be made as thin as possible. This is fixed and stained by the Ziehl-Neelsen method in the ordinary way. The smear now below the microscope shows the enormous numbers of avian tubercle bacilli which can be demonstrated from gut lesions.

During life the tuberculin test is a reliable method of diagnosing infected birds. I am sorry that I was unable to get a number of living fowls to demonstrate the test, but most of you will remember that it was shown at the National Meeting last September. It consists of instilling 0.2 cc. of avian tuberculin into one wattle and noting the reaction at the twenty-fourth hour. All fowls showing a swelling of the wattle in excess of that of the other wattle are considered tuberculous.

The method of dealing with avian tuberculosis may appear drastic, but the disease is so contagious and the germ so resistant that nothing short of destroying all infected fowls and removing the others to clean land, is likely to put an end to the trouble. A thorough cleansing and disinfection of all infected houses must follow and no poultry should be brought on to the infected runs for at least one year.

Disease problems to a large extent are directly proportional to the number of animals kept on a given area, and mass diseases, unless they can be restrained, constitute a natural means for preventing over-population. Accordingly, it is obvious that poultry disease problems will tend to loom more largely wherever large numbers of birds are kept. The general diseases of poultry present many points of interest, and veterinary science is doing its utmost to elucidate and prevent the diseases which menace the industry. Certain of these diseases have been elucidated sufficiently to enable veterinarians and poultry owners to prevent them, and it is to be hoped that fuller use will be made of this knowledge in laying the foundation of a new poultry industry, free from disease.

The Luncheon.

The President occupied the Chair at the luncheon, which was served in the University Union and, proposing the health of The King, expressed the wish that His Majesty might soon be restored to health.

Dr. Dawson, submitting the toast of "Veterinary Science," said the day of the horse had not gone altogether, and in other directions they were finding a certain amount of

work. The inspection of cattle must take place and the veterinary surgeon would also be required in connection with public health administration. Not only that, but there was also a place for the bacteriologist in tracking down disease, and more especially in preventing any onset of disease and seeing that animals were examined and kept in a healthy condition. That brought up the question of the part-time man. It was a difficult matter for a man in part-time practice to carry on his municipal work and to do it with success from the public health point of view. Nor could he have the opportunities for research which the full-time man had in attacking and preventing the further spread of a disease. The prevention of disease started at the wrong end. It started when the disease had already been spread.

In tuberculosis, for instance, they found that the veterinary inspector was not usually on the track until animals had been spreading tubercle bacilli for an unknown period. Even when the veterinary officer had followed up the report of the disease it was possible that the offending cow had been removed.

With regard to pasteurisation, the ideal method, of course, was, as Mr. Henderson had suggested, to make the milk supply as perfect as possible, with the additional safeguard of pasteurisation to overcome the virile organisms which clinical inspection could not always detect. The ideals of public health work in connection with the milk supply were difficult to attain, and he felt that legislation was far in advance of the practical work, and lesgislation would have to mark time until they got their technical work brought up to date, more especially in connection with the Milk and Dairies Act, 1925-26.

Dr. O. CHARNOCK BRADLEY, replying, said he had always been an unblushing optimist so far as veterinary science was concerned and, despite everything said by croakers and others, he was still in an optimistic frame of mind. Veterinary science, undoubtedly, had undergone and was undergoing enormous changes—changes which he was not quite sure were fully appreciated even by those actually within the profession and who were concerned with the work of veterinary science day by day.

It did not require a very long memory to remember that veterinary science had once been limited to the treatment, and the cure, if possible, of certain specific diseases, ailments, accidents and so on. To-day, veterinary science was a very different thing and it was extremely interesting to read the recently-published report of the Lovat Commission on the Colonial Veterinary Service. There it was stated that the Veterinary Service was no longer concerned with individual diseases or cases but had to take a very much wider and broader outlook. From what Dr. Dawson had said and from what he had gathered was said at the meeting during the morning, that view of a wider veterinary science was not limited to the Lovat Commission. He was particularly struck with what Mr. Stewart had told them about hens, for it seemed to him an indication of the direction in which veterinary science and the practitioner must go in future. It was perfectly obvious that he would not be called upon to advise in connection with the individual hen and equally obvious that he would be expected to give advice on a bulk or mass of hens if he might so express it. If he did not, his reputation might suffer.

Consequently, there was quite a number of directions in connection with poultry and stock breeding facts with which the veterinary surgeon in future would require to be familiar. The same thing would occur in connection with sheep and other animals with small monetary value attaching to the individual, but with an enormous monetary value attaching to the mass.

Poultry diseases were going to bulk even more largely in future. He did not know whether or not it had occurred to any of them to think what a curious creature man had made out of the hen. The hen at present was a pathological museum in the sense of having had its physiology upset. The original stock from which the hen came produced, should he say, a dozen or fifteen eggs a year, whereas the modern hen was expected to lay 200, weighing two ounces each. If they considered that no other animal on the face of the earth produced so much meat in relation to size as the domestic hen, they would realise that man had taken many liberties with the hen and had changed her physiology in such an abnormal direction that disease was bound to become more prevalent as time went on. Not only that, but it would probably have more defects in its character and so they might say that the hen of to-day was in jeopardy because man had taken such tremendous liberties with her.

Veterinary science was entering upon a new phase and in another twenty years they would probably see great changes, greater by comparison than those which had occurred during the preceding twenty years.

Mr. ELPHICK (Newcastle) proposed "Our Guests" and in doing so remarked that horses were more economical than tractors. If a tractor broke down things were held up for two or three days until somebody came along and rectified matters.

Dr. FRANKS, in reply, stressed the value of such gatherings as a means of creating a good feeling and co-operation between the medical profession and the veterinary profession. Through coming together they would be able to understand each other. They could not get away from the fact that the veterinary profession would be, in future, more and more closely allied to the public health service. The veterinary service might have its own point of view with which the public health service did not agree, but, having swapped ideas, each would be able to see that the "other side" had more in it than they had thought. It was on such occasions as the present that that happened and he was pleased to be with them.

At the conclusion of the luncheon, Dr. BRADLEY proposed the health of the Chairman, Major PEELE making a brief and appropriate reply.

THE BUSINESS MEETING.

The minutes of the previous meeting, having been published in the *Veterinary Record*, were approved and signed as correct.

Correspondence. (1) From the National Horse Association acknowledging with thanks the subscription of the Association, on affiliation with that body.

(2) From the N.V.M.A. regarding the proposal to increase the membership of the Council by the annual election of additional representatives.

It was agreed that this letter should be remitted to the Council for full consideration and report.

The Hon. Secretary (Mr. J. R. Rider) submitted a report and a financial statement which were considered satisfactory and were adopted.

It was agreed that the sum of £20 should be invested in 5 per cent. War Stock.

Mr. J. Davidson moved, and it was agreed, that the following resolution—"Two members of Council shall retire annually and shall be ineligible for re-election for a period of twelve months thereafter," be incorporated in the Rules.

The President's Address.

Mr. T. M. Mitchell, of Sunderland, was inducted as President and, addressing the meeting, said:—

It is with a feeling of great pride that I find myself in the exalted position of President of this, one of the oldest Divisions of the N.V.M.A. That pride is, I think, legitimate, especially when I look round this assembly and see so many men of more mature years and of wider experience than myself. I feel, however, that I am occupying a position which is, by right, that of someone better fitted for it. At the same time, I am deeply sensible of the great honour you have conferred on me. I hope that I shall be able to live up to your expectations and that at the end of my term of office, you will be able to say that your trust has not been betrayed.

I fully realise, of course, that the man who does the work in the Division is the Secretary, Mr. J. R. Rider, and I am confident that it will be a real pleasure for me to work under his direction, and the co-operation will serve as a constant reminder of the times when we pulled together (or should I say pushed together) in the scrum of the Royal (Dick) football team in pre-war days.

After the exciting events of the past year when we, as hosts, entertained the "National," it would appear as though the forthcoming year can hold nothing of great importance, but I contend that it is just such a prospect which should induce all to flock to the meetings. It is disheartening to the Secretary and the loyal members who attend regularly, to find only a small attendance. As one who, for his sins, spends his life in a comparatively small industrial town, out of the reach, almost, of veterinary politics, it is a source of extreme pleasure and profit to come to the Divisional meetings, and mingle with one's professional brothers and discuss matters of vital interest to the profession. Every subject has many angles from which it may be approached, and the more diverse the views expressed on any one subject the more likely are we to find a true solution. Therefore, may I appeal to those who are somewhat irregular in attendance to make a point of coming and taking part in every meeting. To those who are not members, I can only say: "mend your ways, and by so doing strengthen this Division and thus strengthen the 'National'."

One of the great problems before the profession at the present time is the increase in the number of non-professional practitioners. One has up to the present had the impression that the activities of the "quack" were more or less confined to the "treatment" of the smaller aninals, but apparently this is not so. Let me quote one sentence from an account by an official of the People's Dispensary for Sick Animals, entitled: "A Day's Work at the P.D.S.A. Sanatorium," published in a journal known as the *Animals' Advocate*, and which, after describing the tuition given to students, goes on to say: "All this teaching is under the personal supervision of the Chief of the Technical Staff, whose main ambition is to turn out men with a complete knowledge of the subject of Veterinary Medicine and Surgery." That aim may be a very laudable one, but surely it is the prerogative of the veterinary profession to train its own students, and of the Royal College to examine them as to their capabilities. May I here quote Professor Hobday's words, appearing in the *Veterinary Record*, of April 14th, 1928. He says: "We have no quarrel with these people, but the methods used are not 'playing the game' either to the sick animal of the poor owner or to our profession—and the fact that they are able to carry on in such a large way, doing what is absolutely veterinary work without the aid of veterinary surgeons, is one of the most striking instances of the inadequacy of our protection as a profession."

As you know, this Division has come to an arrangement with the Local Committee of the R.S.P.C.A. whereby veterinary surgeons are in attendance at a dispensary at certain hours to diagnose and treat the ailments of animals of people otherwise unable to obtain proper veterinary advice. An important point of the scheme is that we, by the appointment of three of our members to that Committee, have a very definite voice in the working of the scheme. Judging by reports seen in the *Veterinary Record* of the deliberations of other Divisions, it appears that the profession as a whole approves of this type of arrangement and I have no doubt that very shortly similar dispensaries will be in operation all over the country.

Despite the remarks I have already made as to the forces operating against our profession, I am optimistic enough to believe that our scope is becoming wider, our outlook rosier and our sphere of usefulness to the community gradually more recognised. While the increase in mechanical transport and the consequent diminution in the number of horses required and bred has resulted in the disappearance of many old-established practices, the smallest number of general practitioners to serve the needs of the community seems to have been reached. Indeed, the demand of the cattle owner and the small animal owner would seem to indicate that there is still room for more veterinary surgeons in selected districts. In this connection I am told that the output of the Colleges is not sufficient to supply the demand for locum tenens and assistants for general practice. But, in addition, we have the ever-increasing cry for men suitable for public health work, work as yet almost solely confined to the provisions of the Milk and Dairies Orders and the Diseases of Animals Acts. I venture to predict that in the very near future the services of the veterinary surgeon will be still further required for the inspection of meat. The public, since the days of rationing, has taken a tremendously increasing interest in its food supply, but unfortunately, in England at any rate, the machinery for the adequate inspection of meat is somewhat farcical. If the gentleman known as 'the man in the street' really understood this state of affairs he would demand something very different.

There are, of course, many ways of getting at this gentleman, but there is one in which I think we can all take part. Most of us are connected officially with the health departments in our various districts, and friendly discussions with the Medical Officer with the object of raising his enthusiasm are easily possible, and, through him, that of the local Health Committee.

Let me suggest one method of educating public opinion which can be best done through the health office. We are doing it in my own town of Sunderland and I do not see why it could not be done everywhere. A course of lectures on foods generally, including milk and milk hygiene, and meat inspection in particular, is being given under the auspices of the local Education Committee. The Medical Officer deals with the law on the subject, and I deal with the food animals and their products. The class consists chiefly of young members of the meat trade, and they are tremendously keen, and I feel that we will undoubtedly, as the class proceeds from year to year, create a demand for central control of slaughter and adequate inspection.

Similarly, a judiciously-worked invitation, given by a graded milk producer to the local Health Committee to visit his premises, will result in quite a lot of easy publicity, for, as you know, the press does not allow the city fathers very far out of its sight.

These are only meant to serve as illustrations of what can be done without much trouble. We must each, individually, and in whatever manner we are most fitted, help forward our own cause, and our aim should be to stimulate public interest in any of the health questions which directly involve the services of the veterinary surgeon.

I have probably said quite enough already, but I cannot sit down without making reference to one other event of great importance to the profession, and possibly one of inestimable importance to the world generally, in the discovery of what is claimed to be a reliable means of prophylaxis against distemper. The discoveries of Dr. Laidlaw and Major Dunkin may well revolutionise the ideas of the scientific world as to the treatment and prevention of a host of other diseases caused by filterable viruses, and we as a profession are particularly proud that a veterinary surgeon should be one of the principals in this epoch-making discovery. (Applause.) The immunisation they produce depends on two operations:—(1) the introduction into the dog of a devitalised virus; and (2) the subsequent inoculation with a dose of virulent virus.

It remains to be seen whether the risk of the inoculations is great or not. I consider that it would be to the advantage of all concerned, manufacturer, veterinary profession and patient, if the first-named would discuss his difficulties and apprehensions with us. In view of the fact that, very shortly, we will be called on to administer this method of immunisation, I would be pleased if this point could be discussed at the close of my address. Some of you no doubt will know more of this subject than I, and we are all ready to receive enlightenment.

Just one other point before I close.

You will see by the note on the agenda paper that you are particularly requested to assist the ladies in their effort to raise money for the Victoria Veterinary Benevolent Fund by joining them for tea this afternoon. It is a truism that the poor are always with us, and never has the necessity for funds been so urgent as it is now, to assist those needy ones connected with our own profession. I know perfectly well that calls have been made on the purse from all sides for all sorts of charitable purposes, but who have a better claim on us than those of our own fraternity, who, through no fault of their own, find themselves in difficult circumstances? I appeal to any who feel so disposed, and I hope they are many, to give a donation this afternoon to Mrs. Peele or the Secretary and encourage the ladies in their self-sacrificing effort.

In conclusion, may I once more thank you for the honour of electing me to act as your President. During my term of office, I can assure you that, with your assistance and the advice of my friend our Secretary, I shall do my best to further your interests. (Applause.)

The PRESIDENT, at the conclusion of his address, invited members to contribute any experience they might have had in using the new distemper vaccination method.

Mr. H. S. ELPHICK, who regretted the unavoidable absence of his brother, who was in possession of the facts of the case, said they had been approached to vaccinate six couples of foxhounds, all of which had done well.

Mr. C. G. HILL said he had treated twenty couples of hounds, aged from four to nine months. The dead vaccine was given subcutaneously on one side of the neck, and temperatures subsequently taken twice daily. On the 7th day the living virus was given intradermically on the opposite side of the neck. This appeared to be the time of danger, and it was important that the technique prescribed by Laidlaw and Dunkin should be scrupulously observed. The puppies so far treated had remained healthy.

He thought the method advised would become a sound economic proposition.

ANY OTHER BUSINESS.

Mr. ELPHICK referred to two matters which, he said, he regarded as important. The first was the question of members whose subscriptions were far in arrear, and the second, the possibility of fuller representation of the North of England Division on the Council of the Royal College of Veterinary Surgeons.

On the motion of Mr. HILL, seconded by Mr. WILKINSON, it was agreed that these matters should be considered by the Council.

On the motion of Mr. T. WILKINSON, seconded by Mr. C. G. HILL, a hearty vote of thanks was accorded to the retiring President (Major Peele), who made an appropriate response.

The Hon. Secretary was also thanked for past services.

During the afternoon the ladies of the Division and their friends held a whist drive in the University Union in aid of the Victoria Veterinary Benevolent Fund.

The ladies were received by Mrs. Peele, and were joined by the gentlemen for tea, when the prizes were presented to the winners by Mrs. MITCHELL. The following ladies were successful:—Miss Alderson, Mrs. E. Tate, Mrs. A. Dixon, Mrs. H. M. Robinson and Miss E. French. The amount realised, including subscriptions and the proceeds of the whist drive, was announced as £20 5s., to which must be added 25s. subsequently received, making a total of £21 10s.

The proceedings were much enjoyed by those present, and the hope was expressed that such a gathering might become an annual event.

J R. RIDER, *Hon. Secretary.*

North Midland Division, N.V.M.A.*

A meeting of the above Division was held at the King's Head Hotel, Change Alley, Sheffield, on March 8th, 1929.

In the absence of the President the Chair was taken by the Past President, Mr. G. J. Furness of Alfreton, and the following members were also present: Messrs. M. Robinson, C. S. Smith, G. Green, A. Walker, A. D. J. Brennan, F. C. Scott, E. J. Angler, W. Collinson, T. Bowett, T. C. Fletcher, R. Hudson, S. H. Nixon, H. Thompson, J. Abson, E. G. Johnson, and W. Tweed (Hon. Secretary).

Visitors.—Messrs. J. D. Coward, D. D. Canning and J. Heard.

Apologies for absence were received from Messrs. Murgatroyd, Woodrow and Marrison.

The Hon. Secretary was instructed to convey a vote of sympathy to the President in his illness and the hope that he will have a speedy recovery.

The minutes of last meeting were taken as read and were confirmed.

A resolution was passed on the proposition of Mr. FLETCHER, seconded by Mr. BOWETT, that any two of the following, the President, Hon. Treasurer or Hon. Secretary may sign cheques on behalf of the Division.

New Members.—Mr. G. D. Coward, M.R.C.V.S., Ministry of Agriculture, Sheffield, and Mr. D. D. Canning, M.R.C.V.S., D.V.S.M., West Riding County Council, Doncaster, were duly elected.

Mr. James Heard, M.R.C.V.S., 3 Bridgegate Terrace, Howden, Yorks., was nominated as a member.

CORRESPONDENCE.

(1) Relative to the Royal Sanitary Institute Congress to be held in Sheffield in July. The question of the Association providing some form of entertainment to the Veterinary Delegates was discussed, when it was unanimously agreed that a sum up to £25 be granted for this purpose from the funds of the Division.

(2) From the National Veterinary Medical Association relative to Art. 59 in the Articles of Association and the appointment of 25 additional members to serve on the Council of the Association.

After a discussion, a resolution proposed by Mr. SCOTT and seconded by Mr. COLLINSON, was carried, to the effect that the Division favours additional members being appointed to serve on the Council but suggests that instead of the addition of 25 members being elected in the way proposed, better representation would be obtained by allowing each Division to appoint one member for every 25 members or part thereof, instead of 1 in 50 (as at present on the Council) with their Hon. Secretaries. This would result in increased membership of the Council and the Divisions could elect and re-elect their most suitable men, so that continuity of purpose would be obtained.

TREATMENT OF SICK ANIMALS OF THE POOR.

The discussion on the R.C.V.S. and the R.S.P.C.A. free treatment of animals of the poor was continued.

A letter from the President of the National, Dr. Bradley, was read, and after a full discussion, in which most of the members present took part, it was resolved that although no great need existed in that area at present for such a scheme, it would nevertheless be advisable to promote such a scheme in the interests of the profession. It was agreed that a centre for treating such animals was impracticable in that area and that the scheme would be more successful if each veterinary surgeon was prepared to take part and receive animals at his own premises.

Mr. HUDSON proposed a scheme which was thought practicable, namely, that the R.S.P.C.A. should issue books of tickets numbered in duplicate to every veterinary surgeon; veterinary surgeons would issue the tickets to poor persons when they came or were sent for treatment. The card would bear the signature of the owner and his address and the cards would be sent to the Committee of the R.S.P.C.A. for payment at the fee agreed upon for carrying out the work. Particulars as to the amount of treatment rendered might be put on the card.

The issue of tickets by the police and the R.S.P.C.A. was not favoured by the meeting, but cases sent by them would receive treatment and payment would be made on the completed ticket of the veterinary surgeon, the amount granted by the R.S.P.C.A. to be such as to clear expenses of medicines and out-of-pocket expenses. In this way free professional advice would be available for persons too poor to pay for any treatment, or for persons who, in the opinion of the veterinary surgeon, were deserving cases.

It was further recommended that the R.S.P.C.A. should institute a publicity campaign to inform the public that arrangements had been made with veterinary surgeons to treat sick animals of the poor free; then there would be no excuse for cruelty inflicted through lack of treatment or treatment applied by unprofessional men.

PERONEAL TENOTOMY FOR STRINGHALT.

The CHAIRMAN then called on the meeting to inspect two Mounted Police horses exhibited by the Hon. Secretary. These horses were full brothers and were bred by Mr. J. S. Lloyd from a thoroughbred mare and a hackney stallion, both his property. No signs of stringhalt were seen in the parents. One horse commenced to pull both his legs and the condition gradually became worse until he became unsightly on the streets. Peroneal tenotomy was advised and this was carried out. The operation was done a year ago, gradual recovery was noted from the time of the operation, and from a period of about a fortnight after the operation to date no signs of stringhalt have been noted.

The other horse showed commencing signs of stringhalt on the near hind leg. A discussion on the merits of the operation took place and the opinion was expressed that the operation was more successful in bad cases of stringhalt than in the intermittent type.

The PRESIDENT than called on Mr. Fletcher to give his notes on an outbreak of Johne's disease.

[These notes and the discussion which followed their presentation, are reproduced elsewhere in this issue.—Ed.]

A vote of thanks to the Chairman for his conduct of the meeting, and to those who had contributed subjects for the agenda, concluded the proceedings.

WILLIAM TWEED, *Hon. Secretary.*

* Received on 15th March.

Eastern Counties Division, N.V.M.A.

ANNUAL MEETING AT IPSWICH.

Although their number was small, a very pleasant time was spent at Ipswich by those members of the Eastern Counties Division who attended the annual meeting held there on 28th February, 1929. The retiring President (Captain W. Shipley) occupied the chair prior to the election of his successor (Major T. G. Heatley) and, in addition, there were present Messrs. W.J. Browning, J. M. Buchanan, W. F. Howes, H. J. Loveless, C. C. Nesling, F. J. Smith, W. Turtill and Col. W. A. Wood (Hon. Secretary).

At the outset the President expressed his thanks to the members present for braving the inclement weather to put in an appearance—which he accepted as a personal compliment.

The minutes of the last meeting of the Division, which had received publication in the *Record*, were taken as read and were confirmed, on the proposition of Major Heatley, seconded by Mr. Nesling.

CORRESPONDENCE.

(1) Letters of apology for unavoidable absence, from Captain H. R. Allen, Captain T. J. Bosworth, Professor J. B. Buxton, Major A. F. Castle, Mr. R. E. Glover, Captain S. E. Hill, Mr. H. H. Leach, Mr. H. V. Lowe, Captain E. B. Reynolds, Mr. H. L. Roberts, Mr. H. P. Standley, Captain P. R. Turner, Mr. H. E. Wilkinson and Captain W. H. Wortley.

(2) From the Secretary of the National Veterinary Medical Association, enclosing a resolution relative to the proposal of the Council N.V.M.A. to alter the appropriate Bye-law in order to amend the constitution of the Council by the addition of 25 members elected from and by the general body of members of the Association. This resolution had been placed before an Extraordinary General Meeting of the Association, but that meeting decided to send it down to the Divisions for discussion and report.

[This circular letter and resolution appeared in the *Veterinary Record* of February 16th (*vide* Report of Meeting of Mid-West and South Wales Division, page 140.)—ED.]

The HON. SECRETARY, having read these communications, re-iterated the present constitution of Council N.V.M.A. and added that it was now proposed to elect, by general vote of all the members of the Association, an additional twenty-five members of Council, in the same way that voting papers were sent round to all the members of the profession in connection with the election to Council R.C.V.S.

In the circular letter, proceeded Colonel Wood, it said that the present system of representation tended to restrict the attendance at the meetings of Council N.V.M.A., to representatives resident in or around London. In his opinion it did not do that, but if it was so, and the proposed alteration were made, it would not improve matters in that respect, because if the newly-elected members lived a long way from London, they would be no more likely to attend. The Council consisted of a very large number at present—they could roughly arrive at the number by multiplying the number of Divisions by three—but they desired the Divisions to express their opinions as to whether or not that addition to their number, made in that way, was necessary or advisable.

The PRESIDENT observed that they had heard the communications from the "National" which Colonel Wood had explained to a certain extent. It seemed to him that the proposed addition of twenty-five members was possibly put forward on account of poor attendance at the N.V.M.A. Council meetings. It was clear that these new members would not emanate from any one district, but would be widespread throughout the country, as it was open to any member of the Association to nominate.

The HON. SECRETARY: The list of nominated persons will be circulated to each member and he can vote for twenty-five of them.

The PRESIDENT asked members to note that the proposed change would have no effect upon the existing official representation of the Divisions upon the Council of the "National," but it would indirectly enable them to increase the number of members of their Division upon that Council if they chose to nominate one or more of their members and work, amongst the general body of members of the Association, for his or their election.

The HON. SECRETARY said that an important point in the minds of those responsible for the proposal was that in some cases well-known members of the Association, who had done much valuable work on its Council, had failed to find a seat on that body owing to the belief of every society of which they were members that some other society had already elected them as representatives. Under the new constitution, if such an unfortunate oversight occurred, the matter could be remedied.

Major HEATLEY expressed the view that the idea was a sound one, for this reason—at present they were represented, as a Division, by the Hon. Secretary and one representative for every fifty members or portion thereof; the Secretary might find it difficult to get to the meetings, and there might be some excellent men in the Division whom they could put forward and who would be able and willing to attend. Such men were barred, in the existing state of affairs, except those who could secure election by a Division on the present exceedingly limited basis of one in fifty.

He proposed, therefore, "That the Eastern Counties Division, N.V.M.A. are in entire agreement with the resolution that has been placed before us in accordance with the letter from the 'National.'"

He (Major Heatley) could not see, in fact, how any member of a Division could have anything to say against it, because it gave a Division a very great advantage.

The proposition was seconded by Mr. NESLING, and carried unanimously.

(3) From the Secretary of the N.V.M.A., enclosing a proposed scheme for the treatment of sick animals of the poor, in co-operation with the R.S.P.C.A., drawn up by Major Kirk.

The HON. SECRETARY explained that these communications were supplementary to others on the same subject which had been received from the "National" and which had already received consideration by the Division. The Division had both formulated and forwarded its ideas on the subject and he did not think that any good purpose would be served by re-opening the matter. He desired

to inform the members, however, that at the last meeting of Council N.V.M.A., which he attended, a report was presented of the few replies then to hand from Divisions, and the whole matter of receiving replies, considering them and preparing a report for presentation to Council, was placed in the hands of a Committee. In the meantime, a member of Council (Major Kirk) had submitted a scheme which was being sent round to all Divisions which had not yet sent in their findings.

The PRESIDENT reminded the members that the Eastern Counties Division resolution on the matter was to the effect that they were all quite prepared at any time to do anything they could for the sick animals of poor persons, but that they did not favour the establishment of separate clinics. If the R.S.P.C.A. chose to send patients to veterinary surgeons' own premises they would receive treatment, and the accounts would be sent in to the Society.

This concluded consideration of the correspondence.

New Members.—Messrs. S. Bennett, of Cambridge, and J. Buchanan (of Stowmarket) were unanimously elected to membership of the Division.

Financial Statement.—The Hon. Treasurer (Colonel Wood) presented a financial statement of accounts for the past year. These showed the finances of the Society to be in a satisfactory condition, and, said the Treasurer, they were still feeling the benefit of the strenuous and successful efforts made two years ago to get in all the outstanding subscriptions. It would be remembered that last year they decided to transform their £5 donation to the Victoria Veterinary Benevolent Fund into a subscription.

The PRESIDENT, commenting on the statement, said that this year the sum of £24 was outstanding in subscriptions. During the past year they had slightly overspent their income, for the reason that they had subscribed to a very deserving case, and had also had the rules reprinted. To put the matter in order he proposed that the meeting give confirmation to the donation which had been made.

This was agreed, and the accounts were approved, subject to audit, the audited accounts to be circulated, with a copy of the amended rules, to every member of the Division accompanying the notice of the next meeting.

ELECTION OF OFFICERS.

President.—Captain Shipley exercised his privilege of nominating his successor in office, and, on behalf of the Division, invited Major Heatley to accept the Presidency. In taking the chair, Major Heatley said that as he had already passed it he would have preferred Captain Shipley to remain in office for another year, but, the latter having respectfully declined, he felt he must do all he could to maintain the interests of that old Society. (Hear, hear.) It was now several years since he had occupied that honourable position and, with the help of all the members, he would do his best to make his second year of office a successful one. (Applause.).

Vice-Presidents.—The retiring President, and Messrs. H. P. Standley, senr. and P. R. Turner (re-elected).

Hon. Secretary and Treasurer.—Colonel W. A. Wood (re-elected). In moving, from the chair, the PRESIDENT said that they would all be glad to know that Colonel Wood was prepared to continue for another year the excellent service, as their Secretary, he had so faithfully rendered in the past. Colonel WOOD, returning thanks for his re-election, remarked that he would be very pleased to act during the year, but he sincerely hoped that at the end of that time they would find a successor—preferably a younger man, as with youth were usually to be found energy and enthusiasm.

Committee.—Major A. F. Castle. Messrs. H. F. Downe, G. T. Matthews, H. P. Standley, jun., W. Turtill, W. Waters, W. Wortley, with the officers of the Division (*ex-officio*).

Auditors.—Messrs. T. E. Barcham and H. Buckingham.

Representatives to Council N. V. M. A.—The President, Captain W. Shipley, and the Hon. Secretary (*ex-officio*).

Next Meeting.—It was agreed to hold the next meeting of the Division (in July) at Norwich, the Hon. Secretary informing the members that Mr. H. P Standley, senior, in conjunction with one or two others, had undertaken to provide an exhibition of poisonous plants, and to recount interesting cases in which poisonous plants were incriminated.

The PRESIDENT took the opportunity of expressing the hope that during his year of office anyone having interesting clinical cases and specimens would bring them forward, for not only were these interesting in themselves, but they created discussion, which added value to their meetings and were good for them all. He would draw their attention to Rule 10 of the Division, which stated:—

"It shall be incumbent upon a Member to introduce a professional or scientific subject for the consideration and discussion of the Society on each night of Meeting; the topic for consideration may be introduced in the form of an essay, or it may be introduced orally. If at any time there happens to be no notice of a subject for the next Meeting, the President has the power to invite someone, other than a Member of the Society, to read an essay."

He (the President) trusted that every member would take that rule to heart, when there would be no question of its enforcement, for there would be no lack of voluntary effort on the part of everyone.

The meeting concluded with the according of a hearty vote of thanks to Captain Shipley for his services in the chair during the past year.

The members subsequently partook of the hospitality of the President at tea.

W. A. WOOD, *Hon. Secretary.*

R.C.V.S. REGISTER.

The Registrar asks for assistance in finding the addresses of the following Members:—

	Former Address.
Byrne, F. B.	Midleton, Co. Cork.
Dooley, H. G.	Alberta.
Gorman, J.	Chicago, U.S.A.
Hallam, E. H.	Brisbane, Queensland.
Heffernan, M. A. ...	Athy, Kildare.
Hunter, T. S.	Newcastle-upon-Tyne.
McCartan, W. J. ...	Castle St. Newtownards.
O'Donoghue, W. J. ...	Carrickbeg, Co. Tip.
O'Kelly, J. W.	Clonsilla, Co. Dublin.
O'Neill, O. A.	Madagascar.
Simpson, C. S.	Auckland, N. Z.
Somerville, T. V. ...	Monkseaton.
White, J. H. M. ...	Wirksworth, Derby.
Woodcock, E. R. H. ...	Eccleshall, Staffs.

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Aug. 31st to Sept. 6th.—N.V.M.A. Congress at Ayr.

April 8th.—N.V.M.A. Committee Meetings, 10 Gray's Inn Square, W.C.: Finance, 3-45 p.m.; Editorial, 4-30 p.m.

„ 9th.—N.V.M.A. Committee Meetings, 10 Gray's Inn Square: Appointments, 10 a.m.; Organising, 10-30 a.m.; Veterinary Officers' and Public Health, 11-15 a.m.; Joint Meeting Veterinary Officers' and Public Health and Parliamentary, 12 noon; Parliamentary, 12-30 p.m.
N.V.M.A. Council Meeting, 10 Red Lion Square, W.C., 3-30 p.m.
R.C.V.S. Committee Meetings.

„ 10th.—R.C.V.S. Committee Meetings: Registration and Parliamentary.

„ 11th.—R.C.V.S. Committee Meetings: Registration and Examination.
Meeting of the Central Division, N.V.M.A., 10 Red Lion Square, 6-30 p.m.

„ 12th.—R.C.V.S. Committee Meetings: Library and Finance Committees.
R.C.V.S. Council Meeting.
Organising Committee of International Veterinary Congress.

„ 17th.—Dinner of the North Wales Division, N.V.M.A., at the Imperial Hotel, Colwyn Bay, 6-30 p.m.

„ 30th.—Last day for payment of Annual Fees to R.C.V.S.

May 9th—R.C.V.S. Council Election—Last day for Nomination of Candidates.

„ 18th.—Entries due for D.V.S.M. Examination.

„ 23rd.—R.C.V.S. Annual Report and Voting Papers issued.

„ 30th.—R.C.V.S. Council Election—last day for receipt of Voting Papers.

June 6th.—R.C.V.S. Annual General Meeting.

„ 17th.—D.V.S.M. Examination commences in Edinburgh.

July 3rd.—R.C.V.S. Annual Dinner

„ 4th—R.C.V.S. Committee Meetings.

„ 5th.—R.C.V.S. Council Meeting.

„ 9th.—R.C.V.S. Written Examinations.

„ 11th.—R.C.V.S. Oral Examinations begin.

Mr. A. S. Adams, M.R.C.V.S., of Dursley, Glos., is the donor of the £150 gold challenge cup to be secured by the winner of the Berkeley Hunt Nomination race (open), which is the chief event of the annual Berkeley Hunt point-to-point meeting which takes place next Saturday at Rangeworthy. The cup can become the property of the competitor who wins it twice or thrice in succession.

CORRESPONDENCE.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

"Milk Fever and the Nervous Forms of Distemper and Hysteria in Dogs."

To the Editor of The Veterinary Record.

Sir,—May I be allowed, through the *Record*, to correct a mistake in Part I of Mr. Spicer's paper, read before the South Eastern Division on January 16th, and reported in the *Record* of March 2nd; also to thank him for his interesting contributions on the above subject.

Mr. Spicer says: "In suggesting a new theory as to the cause of milk fever, it is wise to see if it can be made to square with well-known facts in connection with that complaint, and it may be as well to tabulate a few of them in enquiry form." Amongst the seven so-called well-known facts he includes the following: "Why is it *never* seen in first and second calvers?" (the italics are mine).

Further he states: "In heifers the udder starts developing for some time before they are due to calve and there is usually a good deal of swelling both in the tissues of the udder and those in the front and rear of it. The ligaments and tissues of the udder are all tense and act as a tight bandage. With the second calf the conditions are similar, but in a lesser degree, and at the third calving the cow may make her bag within twenty-four hours, with all the tissues and ligaments relaxed and nothing to support the arteries and veins when they dilate under the largely increased blood supply which goes to feed the gland with the necessary materials for the secretion of a large quantity of milk."

My purpose in writing this is to state that milk fever does attack before the third calf, which is common knowledge. These cases are frequently, in my experience, associated with a *great deal of swelling*. I have had one such case during the last week in a second calver.

Whilst writing I should like to express my agreement with Major Chambers' letter *re* inflation of the udder. Relapse and/or certain sequelæ are more apt to follow light or moderate inflation of the udder in the treatment of milk fever, than when intense inflation is effected.

Appleby, Yours faithfully, Oscar Stinson.
March 30th, 1929.

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To the Editor of The Veterinary Record.

Sir,—In the issue of the *Veterinary Record* of March 30 (page 261), Professor J. McCunn rather takes me to task (without mentioning my name) for having recorded "sleeping" sickness in dogs, in spite of the fact that Professor Hare had interposed the correction "sleepy sickness is described by Pugh." Surely Professor McCunn cannot think that I should consider the epidemic I described as being due to a trypanosome!

In classifying the various types of epidemic encephalitis in dogs, I suggested the following as being convenient:—(1) hæmorrhagic; (2) transient; (3) recurrent; (4) paralytic; (5) progressive—the last type being divided into two sub-types (a) lethargic and (b) cerebellar. The lethargic type was characterised by very profound lethargy leading to coma and death, whilst subsequent histological examination of the brain and cord in these cases by medical pathologists revealed lesions identical to those found in encephalitis lethargica (sleepy sickness) in human beings. I do not consider, therefore, that Professor McCunn's criticisms were justified in this case.

Sevenoaks. Yours faithfully, L. P. Pugh.
April 1st, 1929.

The Editor acknowledges the receipt of the following:—

Reports of meetings of the Scottish Metropolitan and the Western Counties' Divisions, N.V.M.A., from Messrs. W. C. Miller and R. Barons Nelder, Hon. Secretaries.

Communications from Mr. W. P. Blount (Derby), Principal F.T. G. Hobday (London), Mr. R. A. S. Macdonald (N. Rhodesia), Mr. R. F. Montgomerie (Bangor), Major-General Sir John Moore (London), and Professor W. Robb (Glasgow).